IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Applicant:	Michael Slocombe et al.	Confirmation No:	8719
Serial No.:	09/982,721	Group Art Unit:	2449
Filed:	October 18, 2001	Examiner:	Ashokkumar B. Patel
Docket No.	0023-US-01		

Title: CONTENT REQUEST ROUTING AND LOAD BALANCING FOR CONTENT DISTRIBUTION NETWORKS

APPELLANTS' APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Via EFS-Web
Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to the Appellant's earlier filed Notice of Appeal (April 7, 2010), the Appellant appealed the Office's January 7, 2010, Final Office Action finally rejecting claims 1-7, 9, 14-17 and 30-46. Appellant's Brief is submitted herewith. This Appeal Brief is believed to be fully compliant with 37 C.F.R. § 41.37.

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I. Real Party in Interest (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest in this Appeal is:

Level 3 Communications, LLC
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Broomfield, CO 80021

II. Related Appeals and Interferences (37 C.F.R. § 41.37(c)(1)(ii))

No other appeals or interferences are currently known to Appellant that will directly affect, be directly affected by, or have a bearing on the decision to be rendered by the Board of Patent Appeals and Interferences in the present Appeal.

III. Status of Claims (37 C.F.R. § 41.37(c)(1)(iii))

Claims 1, 30, 34, 38 and 41 are independent claims and claims 2-7, 9, 14-17, 31-33, 35-37, 39, 40 and 42-46 are dependent claims.

In view of the Final Office Action mailed January 7, 2010, claims 1-7, 9, 14-17 and 30-46 stand rejected, and are the subject of this Appeal.

IV. Status of Amendments (37 C.F.R. § 41.37(c)(1)(iv))

No amendments have been filed since the Response to the Non-Final Office Action filed September 8, 2009. All amendments have been entered.

V. Summary of Claimed Subject Matter (37 C.F.R. § 41.37(c)(1)(v))

Independent claim 1 is generally directed to a method of content delivery in a network. See, e.g., paragraphs [0015] and [0026], and FIG. 3. More specifically, the method performs the act(s) of associating each of a plurality of devices in a Domain Name System (DNS) with at least one cache server system. See, e.g., paragraph [0026] and [0027], and FIG. 3. The method further performs the act(s) of assigning a common address to the DNS devices and advertising, by each of the DNS devices, the common address within the network. See, e.g., paragraphs [0031] and [0034]-[0037]. The method further performs the act(s) of monitoring one or more load characteristics of one or more of the cache server systems in the network, and determining if one or more of the load characteristics exceeds a predefined overload metric. See, e.g., paragraphs [0040]-[0042]. The method further performs the act(s) of discontinuing advertising of the

common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric. See, e.g., paragraphs [0040]-[0042].

Independent claim 30 is generally directed to a system for content delivery in a network. See, e.g., paragraphs [0015] and [0026], and FIG. 3. More specifically, the system comprises a plurality of Domain Name System (DNS) devices whereby each DNS device is associated with a cache server system. See, e.g., paragraphs [0026] and [0027], and FIG. 3. Each DNS device is configured to advertise, within the network, a common address to which they are commonly assigned. See, e.g., paragraphs [0031] and [0034]-[0037]. Each DNS device is further configured to monitor one or more load characteristics of the DNS device's associated cache server system. See, e.g., paragraphs [0040]-[0042]. Further, each DNS device is configured to discontinue advertising of the common address of the DNS device's associated cache server system if the associated cache server system has a load characteristic that exceeds the predefined overload metric. See, e.g., paragraphs [0040]-[0042].

Independent claim 34 is directed to a computerized device operable to associate each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network, and maintain on each of the cache server systems content stored on an origin server. See, e.g., paragraphs [0026] and [0027], and FIG. 3. The computerized device is further operable to assign a common address to the DNS devices and advertise the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network. See, e.g., paragraphs [0031] and [0034]-[0037]. The computerized device is further operable to monitor one or more load characteristics of one or more of the cache server systems in the network and to determine if one or more of the load characteristics exceeds a predefined overload metric. See, e.g., paragraphs [0040]-[0042]. Furthermore, the computerized device is operable to discontinue advertising of the common address associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric. See, e.g., paragraphs [0040]-[0042].

Independent claim 38 is directed to a computer program product including a computer-readable medium having instructions stored thereon for enabling a processing device to perform the operation(s) of associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network, and maintaining on each of the cache server systems content stored on an origin server. See, e.g., original claim 10 (filed October 18, 2001), paragraphs [0026] and [0027], and FIG. 3. The instructions further enable the processing device to perform the operation(s) of assigning a common address to the DNS devices, and then advertising, by each of the DNS devices, the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network. See, e.g., paragraphs [0031] and [0034]-[0037]. The instructions further enable the processing device to perform the operation(s) of monitoring one or more load characteristics of one or more of the cache server systems in the network, and determining if one or more of the load characteristics exceeds a predefined overload metric. See, e.g., paragraphs [0040]-[0042]. Furthermore, the instructions enable the processing device to perform the operation(s) of discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric. See, e.g., paragraphs [0040]-[0042].

Independent claim 41 is generally directed to a method of content delivery in a network. See, e.g., paragraphs [0015] and [0026], and FIG. 3. More specifically, the method performs the act(s) of associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network, and maintaining on each of the cache server systems content stored on an origin server. See, e.g., paragraphs [0026] and [0027], and FIG. 3. The method further performs the act(s) of assigning a common address to the DNS devices and advertising, by each of the DNS devices, the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network. See, e.g., paragraphs [0031] and [0034]-[0037]. The method further performs the act(s) of monitoring one or more load characteristics of one or more of the cache server systems in the network, and determining if one or more of the load characteristics exceeds a predefined overload metric. See, e.g., paragraphs [0040]-[0042]. Furthermore, the method performs the act(s) of discontinuing advertising of the

common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric. See, e.g., paragraphs [0040]-[0042]. After the discontinuing act, the method performs the act(s) of enabling the cache server system to be accessed by another system that has already resolved a DNS name to the DNS device until the DNS name expires, and restarting advertising when the load characteristic decreases below the predefined overload metric. See, e.g., paragraphs [0040]-[0042].

VI. Ground of Rejection to be Reviewed on Appeal (37 C.F.R. § 41.37(c)(1)(vi))

The issues for review are whether:

1. claims 1, 2, 4, 14, 16, 17, 30, 31, 34, 35, 38, 39 and 42-46 are unpatentable under 35 U.S.C. § 103(a) over International Patent Publication No. WO/2002/071720 to Rajahalme ("Rajahalme") in view of Internet Engineering Task Force Request for Comments 2461 ("RFC") and U.S. Patent No. 6,779,017 to Lamberton et al. ("Lamberton"), in further view of U.S. Patent No. 6,167,438 to Yates et al. ("Yates"); and

2. claim 3, 5-7, 9, 15, 32, 33, 36, 37, 40 and 41 are unpatentable under 35 U.S.C. § 103(a) over Rajahalme in view of RFC and Lamberton, in further view of Yates, and in further view of U.S. Patent Publication No. 2006/0271705 to Garcia-Luna-Aceves ("Garcia").

VII. Argument (37 C.F.R. § 41.37(c)(1)(vii))

A. Rejection Under 35 U.S.C. § 103(a) Over Rajahalme in View of RFC and Lamberton, in Further View of Yates

At page 4 of the Final Office Action mailed January 7, 2010, the Office rejected claims 1, 2, 4, 14, 16, 17, 30, 31, 34, 35, 38, 39 and 42-46 under 35 U.S.C. § 103(a) as being unpatentable over Rajahalme in view of RFC and Lamberton, and in further view of Yates.

i. Claims 1, 2, 4, 14, 16, 17, 30, 31, 34, 35, 38, 39 and 42-46

Appellant contends that the Rajahalme, RFC, Lamberton and Yates references, taken alone or in combination, neither teach nor suggest all the limitations of independent claim 1. As such, the rejection fails to satisfy a *prima facie* case of obviousness. Furthermore, Appellant maintains that the Rajahalme, RFC, Lamberton and Yates references are not properly combinable under § 103(a).

Independent claim 1 reads as follows:

> 1. A method of content delivery in a network, comprising:
> associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network and maintaining on each of the cache server systems content stored on an origin server;
> assigning to the DNS devices a common address;
> advertising, by each of the DNS devices, the common address within the network;
> monitoring one or more load characteristics of one or more of the cache server systems in the network;
> **determining if one or more of the load characteristics exceeds a predefined overload metric; and**
> **discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric**.
>
> (emphasis added)

The "RFC" Reference

In the January 7, 2010, Office Action, the Examiner correctly concedes that Rajahalme, Lamberton and Yates do not teach the claim 1 limitations of: i) advertising, by each of the DNS devices, the common address within the network, and ii) discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric. However, Appellant respectfully disagrees with the Examiner's contention that the RFC reference teaches these limitations.

In general, "IPv6 nodes on the same link use Neighbor Discovery to discover each other's presence, to determine each other's link-layer addresses, to find routers and to maintain reachability information about the paths to active neighbors." RFC, Abstract. In this manner, network nodes can determine the presence of other nodes in a network through the use of Neighbor Solicitation and Neighbor Advertisement messages. In contrast, the method described in claim 1 generally relates to load-balancing among cache servers. This can be accomplished, for example, by providing a common address of a DNS (associated with a plurality of cache servers) to other nodes in a network. Unlike the Neighbor Discovery protocol discussed in the RFC reference, the common address of claim 1 is not being advertised so that the DNS device(s) can discover other network nodes and maintain reachability information. Instead, the common address is advertised to promote load-balancing among cache servers.

Furthermore, the Examiner incorrectly equates Neighbor Unreachability Detection with the claim 1 limitation of "discontinuing advertising a common address." Neighbor Unreachability Detection enables a "node [to] actively track the reachability 'state' for the neighbors to which it is sending packets." RFC, § 7.3.1. For instance, "a neighbor is considered reachable if the node has received a confirmation that packets recently sent to the neighbor were received by its IP layer. Positive confirmation [is indicated by]… receipt of a Neighbor Advertisement message that is a response to a Neighbor Solicitation message." RFC, § 7.3.1. As such, the Neighbor Unreachability Detection procedure does not cause Neighbor Advertisement messages to be discontinued. In fact, Neighbor Unreachability Detection *encourages* the transmission of Neighbor Advertisement messages (i.e., to be sent in response to the Neighbor Solicitation messages that initiate the Neighbor Unreachability Detection procedure, per RFC, §

7.3.1). Thus, at least in this respect, the RFC reference teaches away from the claim 1 step of "discontinuing advertising the common address."

The following passage in the RFC reference pertains to node behavior during Neighbor Unreachability Detection:

> RFC § 7.3.3: Node Behavior
>
> While in the PROBE state, a node retransmits Neighbor Solicitation messages every RetransTimer milliseconds until reachability confirmation is obtained. Probes are retransmitted even if no additional packets are sent to the neighbor. If no response is received after waiting RetransTimer milliseconds after sending the MAX_UNICAST_SOLICIT solicitations, retransmissions cease and the entry SHOULD be deleted. Subsequent traffic to that neighbor will recreate the entry and performs address resolution again. Note that all Neighbor Solicitations are rate-limited on a per-neighbor basis. A node MUST NOT send Neighbor Solicitations to the same neighbor more frequently than once every RetransTimer milliseconds.
>
> (emphasis added)

Note that it is the Neighbor Solicitation messages and not the Neighbor Advertisement messages that are rate-limited. As its name suggests, a Neighbor Solicitation message is a *request* for an address advertisement and not the address advertisement itself. Furthermore, it is incorrect to infer that limiting the transmission of Neighbor Solicitation messages indirectly causes the transmission of Neighbor Advertisement messages to be limited. According to the RFC reference, the reason Neighbor Solicitation messages are no longer sent to a given node is due to the fact that Neighbor Advertisement messages were never received from the given node. In other words, the transmission of Neighbor Advertisement messages cannot be discontinued if they were never being transmitted in the first place. Thus, neither the Neighbor Solicitation nor the Neighbor Advertisement behaviors described in the RFC reference teach or suggest the claim 1 step of "discontinuing advertising a common address."

The "Lamberton" Reference

The Examiner also concedes that the Yates, Rajahalme and RFC references do not teach or suggest "determining if one or more of the load characteristics exceeds a predefined threshold;

and discontinuing device associated with a server system determined to have a load characteristic that exceeds the predefined overload metric." However, the Examiner argues that Lamberton teaches these limitations. Although Appellant agrees that the Yates, Rajahalme, and the RFC references do not teach or suggest these limitations, Appellant was unable to find the "discontinuing device associated with a server system…" limitation in claim 1. Appellant assumes that the Examiner is referring to the "*discontinuing advertising of the common address by each DNS device associated with a cache server* system determined to have a load characteristic that exceeds the predefined overload metric" limitation of claim 1. (emphasis added) Presuming this to be the case, Appellant contends that Lamberton does not teach or suggest these limitations for at least the following reasons.

The Examiner cites the following passage in Lamberton to reject claim 1:

> The metric used to decide which server is to be selected at a given instant depends on the design of the load balancer which is assumed to collect from all the servers, at regular intervals, performance information regarding their level of activity. In broad general terms, it can be said that the least busy of the servers is selected in an attempt to indeed reach the goal of balancing the workload equally over all the servers. Lamberton, col. 6, lines 22-30.

The Examiner attempts to draw a comparison between the "least busy server" technique of Lamberton and the 'overload' metric used in claim 1. This comparison is incorrect. The load-balancing technique used in Lamberton does not determine whether a server system is too busy to service new requests (e.g., by using an overload metric). Instead, the Lamberton technique selects a "least busy server" by comparing the relative activity levels among the servers. It should be noted that a non-selected (or non-"least busy") server according to Lamberton is not the same as an overloaded server according to claim 1 (i.e., a server with a load characteristic that exceeds an overload metric). In other words, the non-selected (or non-"least busy") servers in Lamberton may still be quite capable of handling new requests even though these servers were not deemed to be the least active. As such, the Lamberton load-balancing technique is incapable of determining whether a particular server (or cluster of servers) is overloaded and should not have any new requests routed thereto.

Furthermore, Appellant believes that the Rajahalme and Yates references fail to overcome at least the deficiencies discussed above with respect to the RFC and Lamberton

references. Thus, the Rajahalme, RFC, Lamberton and Yates references, even if they were to be combined (which Appellant does not admit that they would be properly combined), fail to teach or suggest every limitation of claim 1.

For at least these reasons, claim 1 is patentable over the cited references and is in a condition for allowance. As claims 2-7, 9, 14-17, 42, and 43 depend from allowable claim 1, these claims are also in a condition for allowance at least by virtue of their dependencies.

Additionally, as independent claim 30, 34 and 38 contain the same or similar limitations as allowable claim 1, these claims are also patentable over the cited references for at least the reasons discussed above and are in a condition for allowance. As claims 31 and 44-46 depend from allowable claim 30, claim 35 depends from allowable claim 34, and claim 39 depends from allowable claim 38, these claims are also in a condition for allowance at least by virtue of their dependencies.

Reconsideration and withdrawal of the rejections of claims 1, 2, 4, 14, 16, 17, 30, 31, 34, 35, 38, 39 and 42-46 are respectfully requested.

B. Rejection Under 35 U.S.C. § 103(a) Over Rajahalme in View of RFC and Lamberton, in Further View of Yates, and in Further View of Garcia

At page 15 of the Final Office Action mailed January 7, 2010, the Office rejected claims 3, 5-7, 9, 15, 32, 33, 36, 37, 40 and 41 under 35 U.S.C. § 103(a) as being unpatentable over Rajahalme in view of RFC and Lamberton, in further view of Yates, and in further view of Garcia.

i. Claims 3, 5-7, 9, 15, 32, 33, 36, 37, 40 and 41

Claims 3, 5-7, 9 and 15 ultimately depend from allowable claim 1 and are believed to be patentable over the cited references for at least the reasons described above with respect to claim 1. Further, Appellant believes that Garcia is unable to overcome the above-described deficiencies of the RFC and Lamberton references. As such, claims 3, 5-7, 9 and 15 are in a condition for allowance at least by virtue of their dependencies.

Claims 32 and 33 ultimately depend from allowable claim 30 and are believed to be patentable over the cited references for at least the reasons described above with respect to claims 1 and 30. Further, Appellant believes that Garcia is unable to overcome the above-described deficiencies of the RFC and Lamberton references. As such, claims 32 and 33 are in a condition for allowance at least by virtue of their dependencies.

Claims 36 and 37 ultimately depend from allowable claim 34 and are believed to be patentable over the cited references for at least the reasons described above with respect to claims 1 and 34. Further, Appellant believes that Garcia is unable to overcome the above-described deficiencies of the RFC and Lamberton references. As such, claims 36 and 37 are in a condition for allowance at least by virtue of their dependencies.

Claim 40 ultimately depends from allowable claim 38 and is believed to be patentable over the cited references for at least the reasons described above with respect to claims 1 and 38. Further, Appellant believes that Garcia is unable to overcome the above-described deficiencies of the RFC and Lamberton references. As such, claim 40 is in a condition for allowance at least by virtue of its dependency.

Independent claim 41 contains the same or similar limitations as allowable claim 1 and, thus, is patentable over the cited references for at least the reasons described above with respect

to claim 1. Further, Appellant believes that Garcia is unable to overcome the above-described deficiencies of the RFC and Lamberton references. As such, claim 41 is in a condition for allowance.

Reconsideration and withdrawal of the rejections of claims 3, 5-7, 9, 15, 32, 33, 36, 37, 40 and 41 are respectfully requested.

C. Conclusion

As the underlying rejections for independent claims 1, 30, 34, 38 and 41 (and any claims dependent therefrom) fail to satisfy a *prima facie* case of obviousness, the rejections of each claim dependent therefrom are not addressed herein. Such silence should not be considered Appellant's acquiescence to the Examiner's rejections to each dependent claim, and Appellant reserves the right to address such merits at a later time, if appropriate.

In view of the law and facts stated herein, Appellant respectfully submits that the reasoning and the references cited by the Office are insufficient to maintain obviousness rejections of the claims. Appellant respectfully urges that the rejections of claims under 35 U.S.C. § 103(a) are improper. Reversal of the rejections in this application is respectfully requested.

A representative from the U.S. Patent and Trademark Office is invited to contact the undersigned at the below-listed telephone number regarding any matters relating to the present application.

Respectfully submitted this 7th day of July, 2010.

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VIII. Claims Appendix

1. (Previously Presented) A method of content delivery in a network, comprising:

associating each of a plurality of devices in a Domain Name System (DNS) with at least one cache server system;

assigning to the DNS devices a common address;

advertising, by each of the DNS devices, the common address within the network;

monitoring one or more load characteristics of one or more of the cache server systems in the network;

determining if one or more of the load characteristics exceeds a predefined overload metric; and

discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric.

2. (Original) The method of claim 1, wherein the common address is an anycast address.

3. (Previously Presented) The method of claim 1, wherein the advertising act comprises:

sending routing information to a plurality of routers in the network in accordance with the Border Gateway Protocol (BGP).

4. (Previously Presented) The method of claim 1, wherein the cache server systems are geographically distributed across the network.

5. (Previously Presented) The method of claim 1, wherein the DNS devices are collocated with the cache server systems with which the DNS devices are associated.

6. (Previously Presented) The method of claim 1, wherein each cache server system and associated DNS devices are located in a different Internet Service Provider Point of Presence.

7. (Previously Presented) The method of claim 1, wherein each cache server system and associated DNS device is located at or near an entry point of the network.

8. (Canceled)

9. (Previously Presented) The method of claim 1, wherein at least one of the cache server systems comprises at least two cache servers connected in a cluster, and wherein the at least two cache servers are coupled to a switch usable to select from among the at least two cache servers based on a selection policy.

10-13. (Cancelled)

14. (Previously Presented) The method of claim 1, further comprising after discontinuing advertisement by a DNS device for an associated cache server system having a load characteristic that exceeds the predefined overload metric, restarting advertising when the load characteristic decreases below the predefined overload metric.

15. (Previously Presented) The method of claim 1, further comprising, if a DNS device discontinues advertisement of it associated cache server system, continuing to use the cache server system by another system that has already resolved a DNS name to the DNS device, until the DNS name expires.

16. (Previously presented) The method as recited in claim 3, further comprising storing, by each of the routers, multiple routes in association with the common address in a routing table.

17. (Previously presented) The method as recited in claim 16, further comprising:

receiving a DNS resolution request at one of the routers, wherein the request specifies the common address and requests resolution of a DNS name;

selecting a route representing the shortest network distance to one of the DNS devices; and

resolving the DNS name to a unique address of the cache server system associated with the one of the DSN devices.

18-29. (Cancelled)

30. (Previously Presented) A system for content delivery in a network comprising:

a plurality of Domain Name System (DNS) devices, each of the DNS devices associated with a cache server system;

wherein the DNS devices are assigned a common address, and wherein each DNS device advertises the common address within the network;

wherein each DNS device monitors one or more load characteristics of the DNS device's associated cache server system in the network; and

wherein each DNS device discontinues advertising of the common address of the DNS device's associated cache server system if the associated cache server system has a load characteristic that exceeds the predefined overload metric.

31. (Previously Presented) The system of claim 30, wherein each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric restarts advertising when the load characteristic decreases below the predefined overload metric.

32. (Previously Presented) The system of claim 30, wherein the cache server system is accessible by a separate system that has already resolved a DNS name to the DNS devices, the cache server system being accessible by the separate system until the DNS name expires.

33. (Previously Presented) The system of claim 30, wherein the common address is an anycast address and the DNS devices perform advertising by sending routing information to a plurality of routers in the network in accordance with the Border Gateway Protocol (BGP).

34. (Previously Presented) A computerized device comprising:

a processor;

a memory unit that stores instructions associated with an application executed by the processor; and

an interconnect coupling the processor and the memory unit, enabling the computerized device to execute the application and perform operations of:

associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network and maintaining on each of the cache server systems content stored on an origin server;

assigning to the DNS devices a common address;

advertising, by each of the DNS devices, the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network;

monitoring one or more load characteristics of one or more of the cache server systems in the network;

determining if one or more of the load characteristics exceeds a predefined overload metric; and

discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric.

35. (Previously Presented) The computerized device of claim 34, further comprising after discontinuing advertisement by a DNS device for an associated cache server system having a load characteristic that exceeds the predefined overload metric, restarting advertising when the load characteristic decreases below the predefined overload metric.

36. (Previously Presented) The computerized device of claim 34, further comprising, if a DNS device discontinues advertisement of it associated cache server system, enabling the cache server system to be accessed by another system that has already resolved a DNS name to the DNS device until the DNS name expires.

37. (Previously Presented) The computerized device of claim 34, wherein the common address is an anycast address and the advertising act includes sending routing information to a plurality of routers in the network in accordance with the Border Gateway Protocol (BGP).

38. (Previously Presented) A computer program product including a computer-readable medium having instructions stored thereon for performing content delivery operations in

a network, such that the instructions, when carried out by a processing device, enable the processing device to perform the operations of:

associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network and maintaining on each of the cache server systems content stored on an origin server;

assigning to the DNS devices a common address;

advertising, by each of the DNS devices, the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network;

monitoring one or more load characteristics of one or more of the cache server systems in the network;

determining if one or more of the load characteristics exceeds a predefined overload metric; and

discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric.

39. (Previously Presented) The computer readable medium of claim 38, further comprising after discontinuing advertisement by a DNS device for an associated cache server system having a load characteristic that exceeds the predefined overload metric, restarting advertising when the load characteristic decreases below the predefined overload metric.

40. (Previously Presented) The computer readable medium of claim 38, further comprising, if a DNS device discontinues advertisement of it associated cache server system, enabling the cache server system to be accessed by another system that has already resolved a DNS name to the DNS device until the DNS name expires.

41. (Previously Presented) A method of content delivery in a network, comprising:

associating each of a plurality of devices in a Domain Name System (DNS) with one of a plurality of cache server systems located in the network and maintaining on each of the cache server systems content stored on an origin server;

assigning to the DNS devices a common address;

advertising, by each of the DNS devices, the common address within the network to indicate that the content is available for retrieval from each associated cache server system by end user systems communicatively connected to the network;

monitoring one or more load characteristics of one or more of the cache server systems in the network;

determining if one or more of the load characteristics exceeds a predefined overload metric;

discontinuing advertising of the common address by each DNS device associated with a cache server system determined to have a load characteristic that exceeds the predefined overload metric; and

after discontinuing advertisement by a DNS device for an associated cache server system having a load characteristic that exceeds the predefined overload metric, performing the steps of:

enabling the cache server system to be accessed by another system that has already resolved a DNS name to the DNS device until the DNS name expires; and

restarting advertising when the load characteristic decreases below the predefined overload metric.

42. (Previously Presented) The method as in claim 1, wherein advertising, by each of the DNS devices, the common address within the network includes indicating that content is available for retrieval by end user systems from each associated cache server system communicatively connected to the network.

43. (Previously Presented) The method as in claim 42, wherein the cache server system comprises a single cache server.

44. (Previously Presented) The system as in claim 30, wherein each DNS device advertises the common address within the network to indicate that the content is available for retrieval by end user systems from the associated cache server system communicatively connected to the network.

45. (Previously Presented) The system as in claim 44, wherein the cache server system comprises a single cache server.

46. (Previously Presented) The system as in claim 30, wherein the cache server system comprises a plurality of cache servers.

IX. Evidence Appendix (37 C.F.R. § 41.37(c)(2))

None

X. Related Proceedings Appendix (37 C.F.R. § 41.37(c)(2))

None